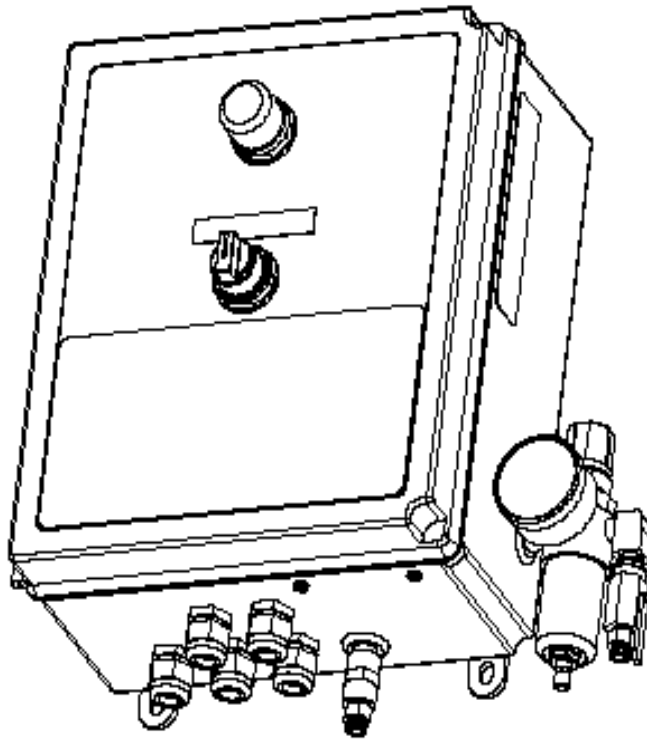


DRY LUBE CONTROL SYSTEM

Installation and Operation Manual



Retain this manual for installation, operation, and servicing information.



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1.0 Preface

This manual has been written to present the basic installation and operational characteristics of the Dry Lube *Control System*. *This manual applies, in its entirety, to current units.*

Guidelines will be suggested in reference to the preferred method of installation, however, the variety of equipment and the surrounding physical environment will dictate the actual installation of the Dry Lube *Control System*.

WARNING: These installation and servicing instructions are for use by qualified personnel only. The installation must be made in accordance with local plumbing and electrical codes.

2.0 Introduction

The Dry Lube control system consists of one control box, one 3 zone manifold panel, one pump, and nozzles. The pump size and the number of nozzles required are dependent on the conveyor size. This is typically a Postronic IV or equivalent or Wilden ½" or equivalent pneumatic pump. The control box is splash proof and is shipped with a three-pronged electrical cord for quick set up. One system will be required for each conveyor. If you installing multiple lines adjacent to each other a central pneumatic pumping system can be set up to feed the individual solenoid panels.

Unlike traditional aqueous conveyor lubricants that are diluted with water and sprayed on the conveyor continuously, the dry lube is only sprayed undiluted for short period of times. For example, on a typical beverage line that bottles .5 liter to 24 oz water or CSD products, the feed duration of the concentrated product may only be 5 seconds ON and 60 minutes OFF using 1 GPH rated nozzles. This is the equivalent concentrate feed rate of a diluted lube product that would have been sprayed for the entire hour.

The product can be sprayed through the traditional 1 GPH cone jet nozzles that you would typically find on a conveyor line. There are also replacement tips available that are a wide angle spray in an 80 at 1 GPH and 2 GPH 110 degree pattern. The rule of thumb is to use the blue cone jet nozzles on single lane conveyors up to about 4" wide. They can also be used in conjunction with the wider angle tips which cover 8-12" per nozzle.

Refer to the Dry Lube Technical information for more information. This is more detailed information on lube line setup and application.

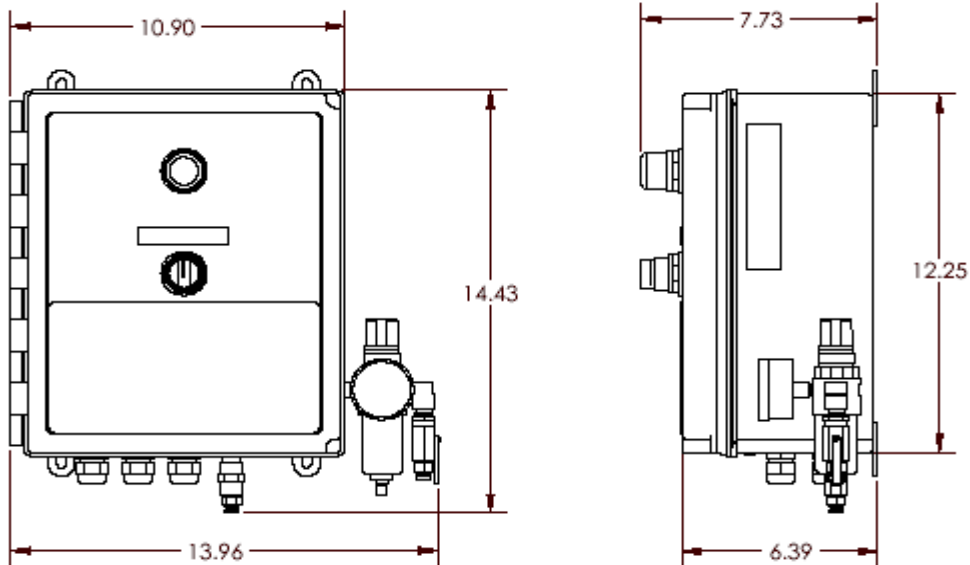
3.0 Specifications

3.1 Control Unit Dimensions

Height (H): 12.25" (31.1 cm)

Width (W): 10.90" (27.7 cm)

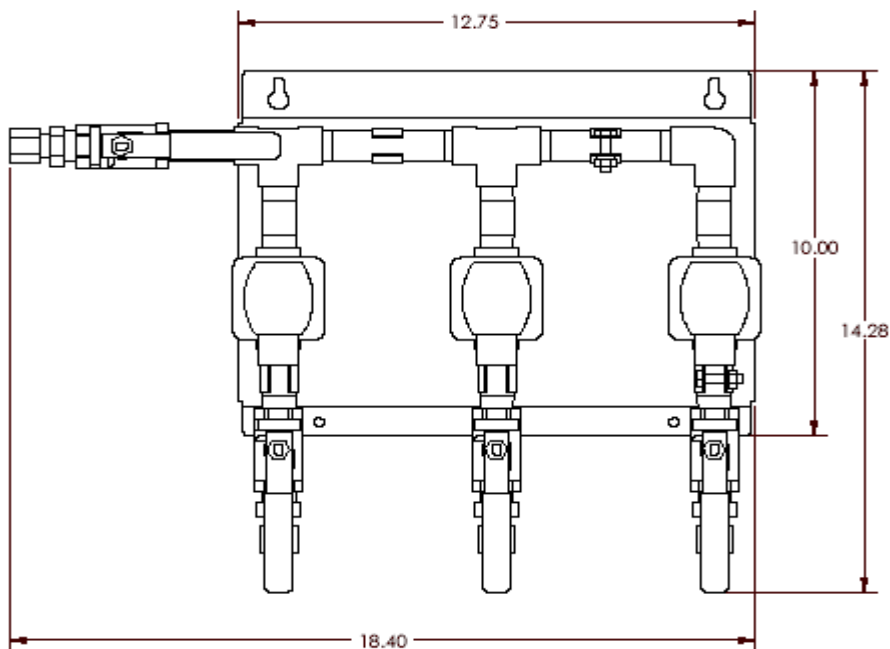
Depth (D): 6.39" (16.2 cm)



3.2 Manifold Unit Dimensions

Height (H): 14.28" (36.3 cm)

Width (W): 18.40" (46.7 cm)



3.3 Control Unit Services Required

Compressed Air: MIN 40 psig (2.7 bars) - MAX. 80 psig (5.5 bars)

Electrical: 110/120 VAC, 50/60

WARNING: The supply air line must not contain an air lubricator.

3.4 Control Unit Access Requirements

For ease of operation, the cabinet should be placed such that the “OFF-ON-INITIAL CHARGE” switch is 4' -5' (1.2 -1.5 meters) above the floor.

3.5 Pump Unit Dimensions

Height (H): 7.64” (19.41 cm)

Width (W): 7.13” (18.11 cm)

Depth (D): 9.0” (22.86 cm)

3.6 Pump Unit Services Required

Compressed Air: MIN. 40 psig(2.7bars)

MAX. 80 psig (5.5 bars)

AIR FLOW 3 scfm (1.4 dm³/s)

3.7 System Equipments Supplied

Dry Lube System Complete

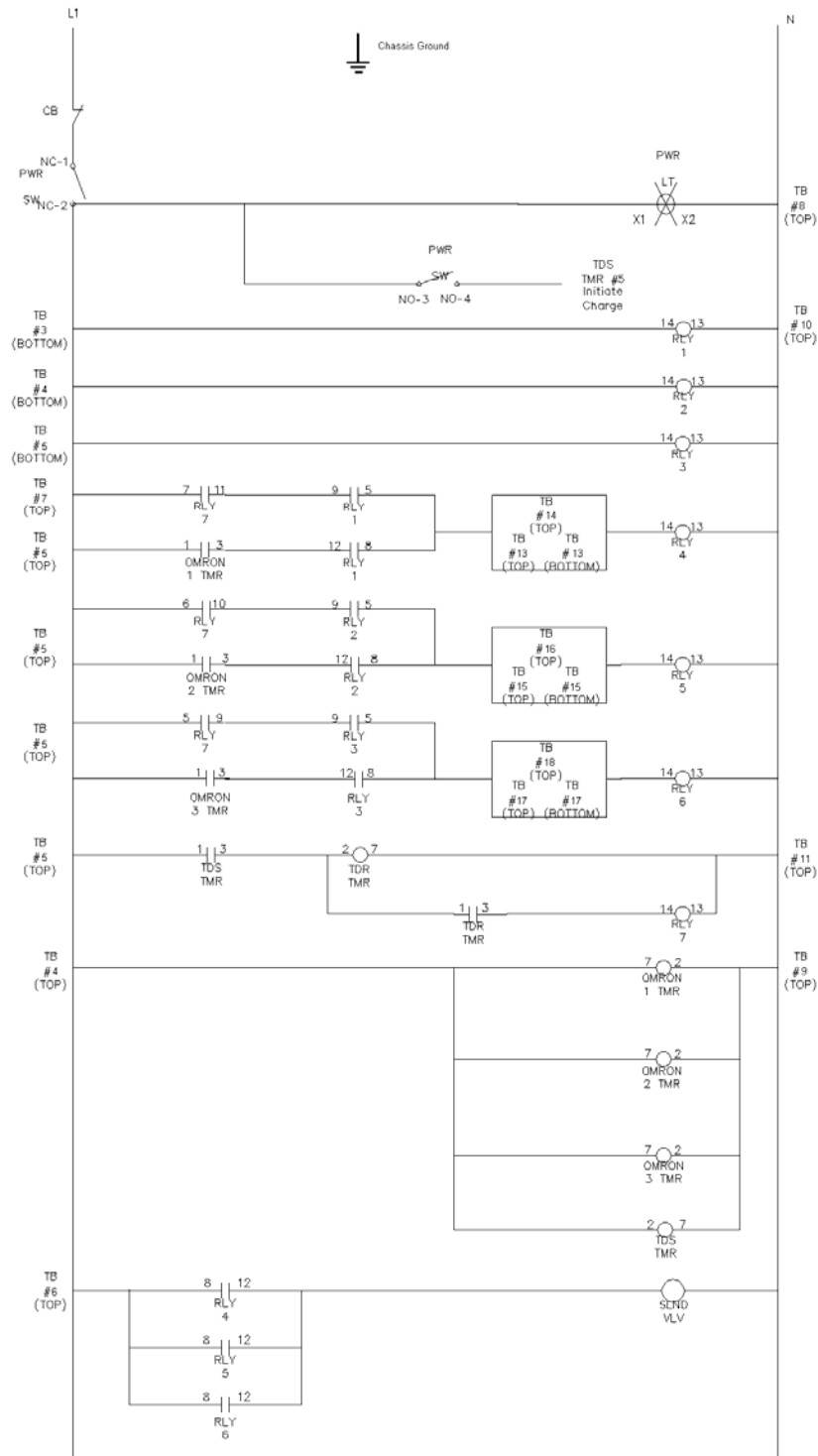
- Dry Lube Control Unit
- Dry Lube Manifold Unit

3.8 System Equipment Not Supplied

For part numbers see Replacement Parts Section 8.0

3.9 Wiring Diagram

DRY LUBE CONTROLLER WIRING DIAGRAM

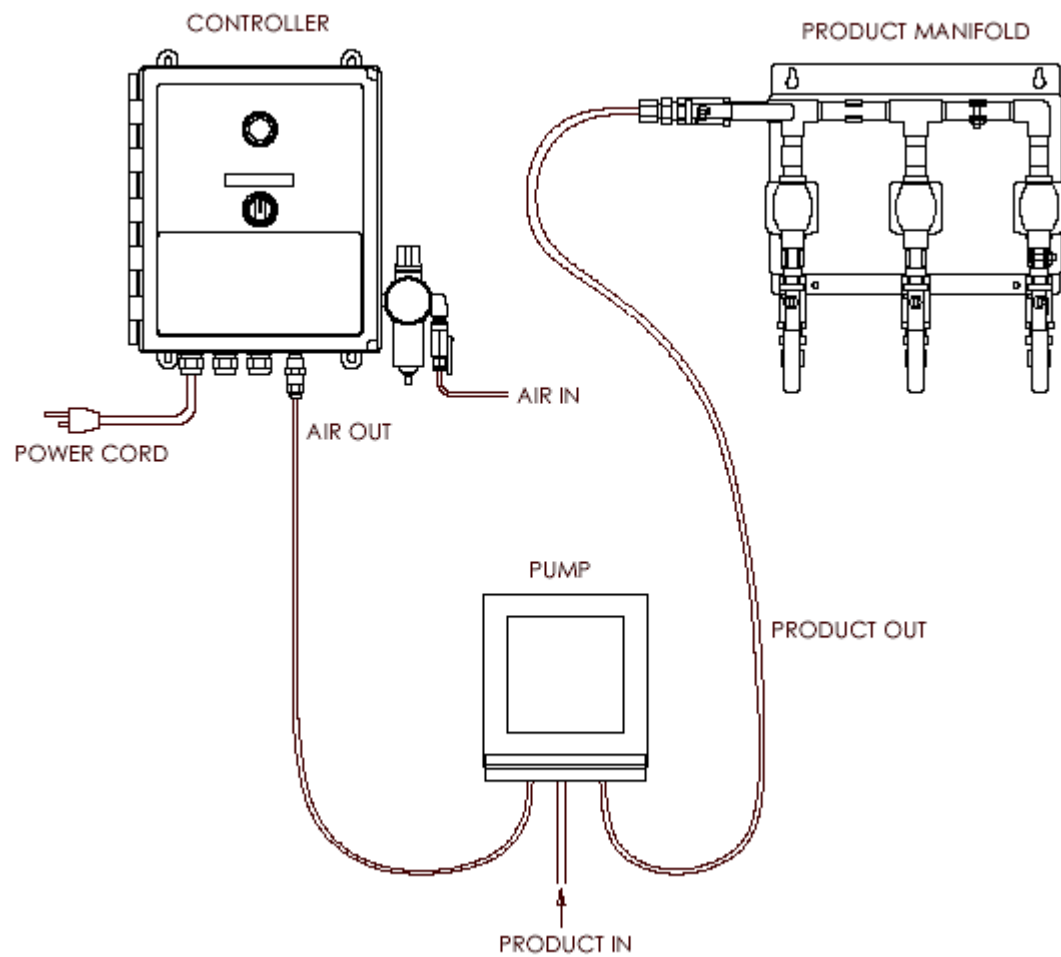


4.0 Installation Procedures

NOTE: These installation and service instructions are for use by qualified personnel only. The installation must be in accordance with local electrical codes.

1. Remove the Controller, solenoid panel and pump from the shipping cartons.
2. Select a location adjacent to conveyor, if possible, to mount the equipment. This will require the assistance of the plant maintenance department or a qualified electrician to run conduit between the controller and solenoid panel. It is desired to mount the controller, solenoid panel and pump next to the conveyor as well as the product drum. The components are modular to allow for alternative installation configurations.
3. The equipment can be mounted on either a concrete wall or a free standing back plate can be fabricated by the plant.
4. Connect air supply to regulator and adjust to 50 psi.
5. Install drum alarm if needed.
6. Install optional zone pressure switch box and connect to lube line. It is preferred to install towards end of a zone to monitor line pressure. The way it functions is that whenever the zone timer activates the pump to deliver lube that zone's timer is reset. From that point the timer will count up until the next lube activation at which time the pressure will reset the timer. If the pressure timer counts past the intended off time, then it didn't have enough pressure to reset and you should look for reasons why it didn't spray, such as no air pressure, empty drum, open line.

System Diagram



5.0 System Connections

5.1 Electrical

WARNING: Line voltage present inside controller cabinet at all times. Disconnect AC power before servicing.

1. The controller can be plugged directly into an outlet or hard wired.
2. There are corresponding relays for each zone which allows that zone to be controller by conveyor movement or devices such as a filler or warmer. When ever the power is interrupted and reactivated that zone timer will restart to the on time so you are going to want to control the power to devices that turn on for a shift or the day and not to devices that start and stop periodically throughout the day such as some conveyers. To connect the device to a particular zone refers to page 5-2. For instance if you want to control zone two by the warmer heater, remove the jumpers on terminal block 6 to the relay 2 (#14) and run wire from a motor contact to these terminals.

5.2 Air

1. Using the 1/4" tubing provided, connect the air line from the solenoid valve in the controller to the port on the pump.

5.3 Product Tubing

1. Run 3/8" tubing from drum probe to pump inlet.
2. Run tubing from pump outlet to the inlet of the solenoid panel.
3. For each zone, run tubing from the exit ball valve of the designated zone to a tee for that zone.

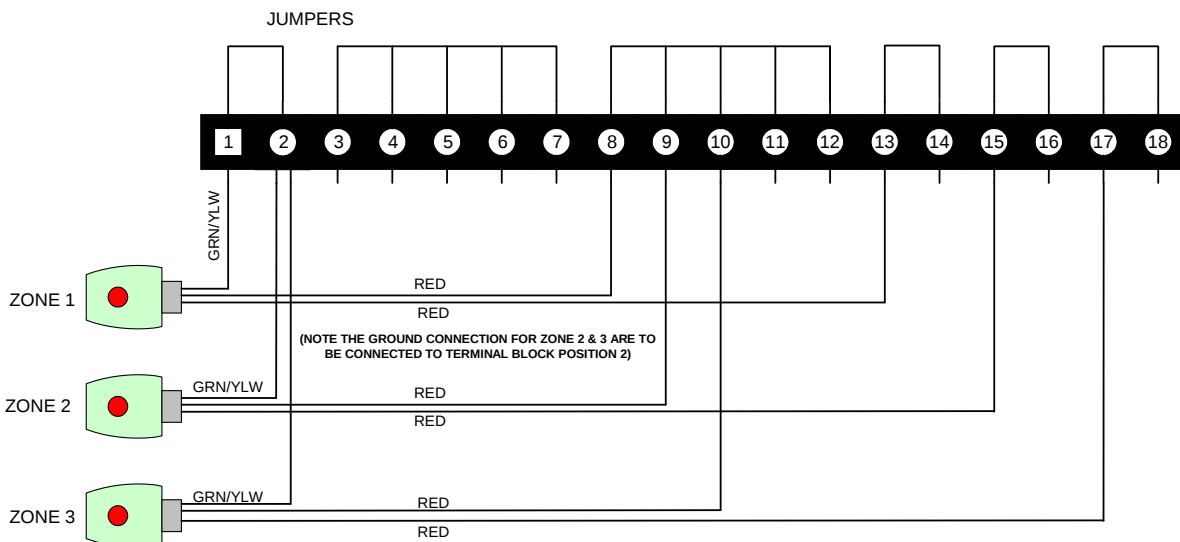
5.4 Wiring Connections

WARNING: Line voltage is present inside the controller cabinet at all times when the power cord is plugged into an outlet. Use proper procedures for handling high voltage equipment.

TERMINAL BLOCK #	DESCRIPTION	CONNECTION
TB 1 - 2	Earth Ground & Chassis Ground	Earth Ground
TB 3 - 7	120 VAC, Controller Voltage (L1)	See Note Below
TB 8 - 12	120 VAC, Controller Voltage (N)	Zone 1, 2, & 3 Valves (N)
TB 8 & 13	120 VAC, Zone 1 Valve	Zone 1 Valve Wire
TB 9 & 15	120 VAC, Zone 2 Valve	Zone 2 Valve Wire
TB 10 & 17	120 VAC, Zone 3 Valve	Zone 3 Valve Wire

NOTE:

- If there is an external relay contact uses to control for Zone 1, Zone 2, and/or Zone3 then remove the black (jumper) wires from TB 3 (bottom), TB 4 (bottom), and TB 5 (bottom) that connected to the relay 1 (#14), relay 2 (#14), and relay 3 (#14) from left to right.

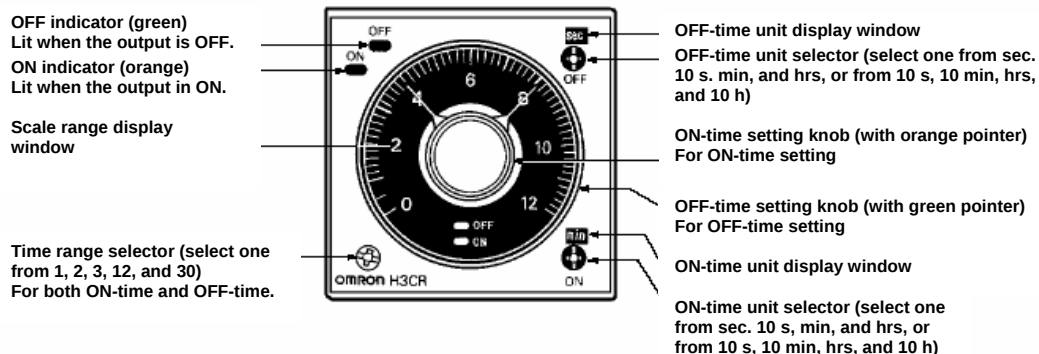


6.0 Start-up and Operation

NOTE: The most important thing to remember that with silicon lubes too much will cause the conveyor to become too slippery and down bottles will follow. The following parameters were established by extensive field testing and should be used as a starting point.

1. The following timers are factory set as follows and should be very close to what the actual conveyor's timers will be set to for each line.
 - a. The three zone timers are to be set to 5 seconds on and 60 minutes off. This time would typically deliver 5 mls per nozzle in the hour's time using the 1 GPH rated nozzle tips. This has been established to deliver the similar amount of concentrated lubricant as an aqueous lubricant such as the Lubodrive family of lubes. Any increase in time out of these parameters will be the equivalent to doubling, tripling, and beyond the comparable aqueous lube concentration. If tipping bottles occur on the conveyor the first reaction is to turn up the concentration which could further enhance the problem which could actually be a conveyor mechanical issue. To increase or decrease the times, adjust the dial on the Omron timer. The hour/minute graduations are adjusted by a small screw driver in the slot directly below the windows that identify seconds or minutes. However, this should never have to be adjusted.

■ RANGE SELECTION



- b. The boost timers are intended only to be used if the conveyor has been thoroughly cleaned and a small amount of lube needs to be reapplied. When the boost timer comes on it controls all active zone timers at the same time. Generally the extra lube would not be required and could possibly create too slick of a surface. It is not necessary to cover or coat the entire conveyor belt. The lube is spread around by the action of the conveyor and bottles. The top boost timer is factory set 30 seconds on and the lower recycle is set at 2 seconds on and 2 seconds off. This means in 30 seconds the lube will be intermittently on and off for a total of 15 seconds which aids in spreading the lube around the conveyor. These times can change according to line layout but keep in mind that it is easy to apply too much lube in a short time.

2. Start up and priming the line

Here is the recommended method to priming the line to insure there are no leaks. Get a pail of water and place drum probe in. Change the Boost timers so that they will feed for a few minutes at a time by adjusting the on time from seconds to minutes. Open one zone valve at a time and turn the controller on. The pump will catch prime and then deliver water to the nozzles for that zone. Inspect all connections for any leaks and correct if needed. Do this for all zones. Remove probe from bucket and place into product drum and rerun the procedure for all zones. Run system until it is observed that the lube has replaced the water spray out of the nozzles.

Check to see that the timers are properly set and turn the power switch to on. If pressure switch box is installed, verify after an hour or so to see that the timer has reset within the given off time.

3. Every visit

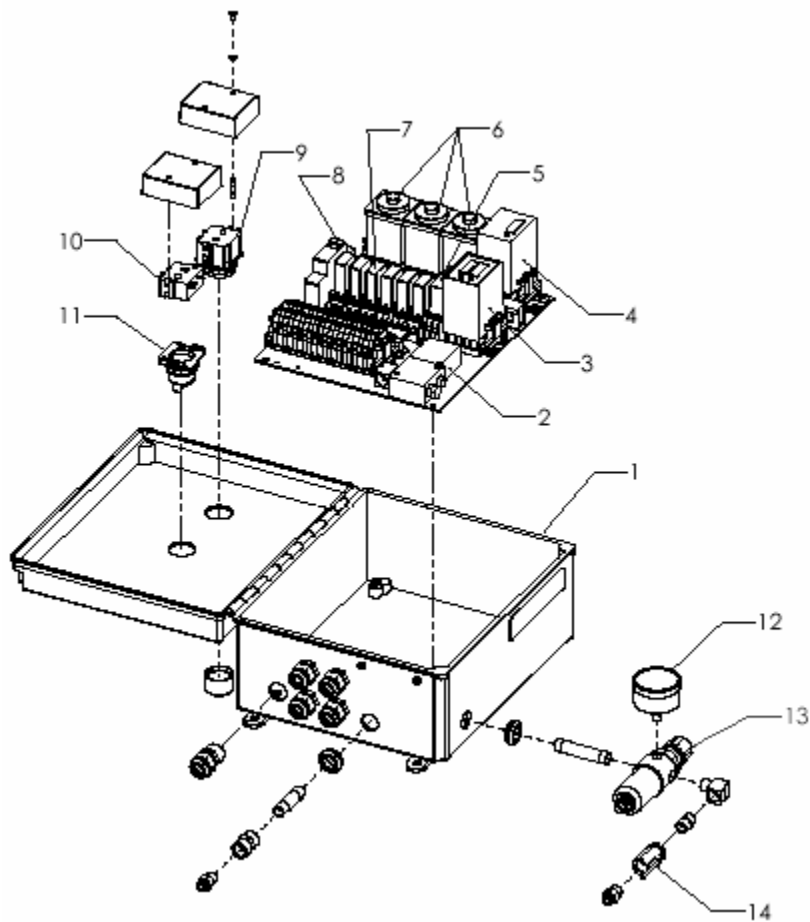
Starting with the drum, make sure that there is adequate product and then verify the controller is operational and that the ball valves are open on the manifold. Walk the line to verify no visible lube is under the conveyors in the drip pans or on the floor. Also inspect the tubing and that the nozzles are in the correct orientation on the conveyors.

7.0 Troubleshooting

Symptom	Possible Cause	Action
7.1 Timers do not activate or are lighted.	1. No 120VAC power to box. 2. OFF/ON switch in off position. 3. Relay not closed or has failed.	a. Check power to controller. Check controller. b. Check breaker switch c. Have electrician verify relay operation
7.2 Pump does not stroke.	1. No power to controller 2. No “air” to the system. 3. Incorrect time set on timers. 4. Loose wire connections. 5. Failed air solenoid valve. 6. Check balls in pump sticking and/or clogged.	a. Check electrical source back to CIP controller. a. Verify air source. a. Adjust timer to stroke pump. a. Check wiring. a. Replace valve and check. a. Remove top ports and flush out.
7.3 Pumps do not prime.	1. Air leak on suction side of pump. 2. Restriction on discharge side of pump. 3. Failed air solenoid.	a. Check suction tubing and connections for air leaks. a. Remove discharge tubing from pump and prime. a. Replace.
7.4 No product output on discharge side.	1. Restriction on discharge side of pump. 2. Restriction inside anti-siphon valve. 3. Restriction and/or clogged on discharge side of tubing.	a. Turn controller power switch OFF. b. Turn air supply valve OFF. c. Relieve the pressure by pushing the recessed button on top of the air solenoid valve. d. Relieve the pressure by loosening one of the caps on top of the pump. e. Replace valve and check. f. Replace tubing and check.

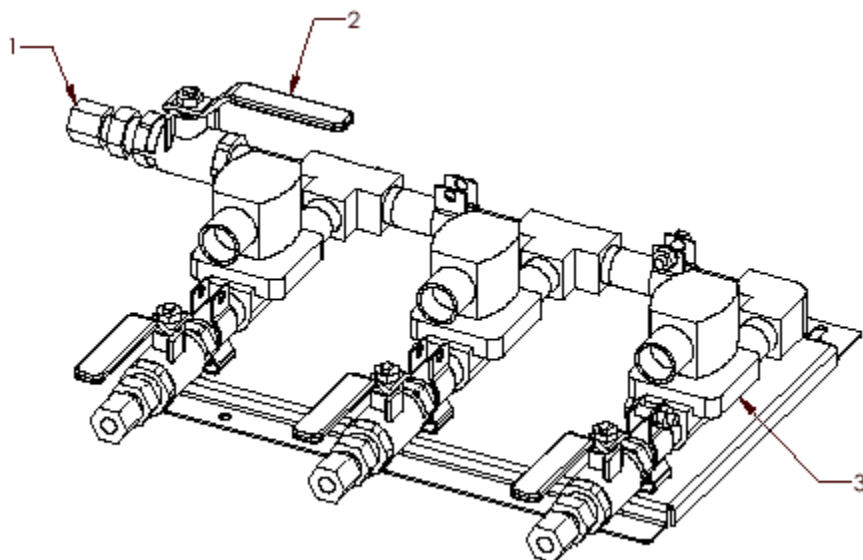
8.0 Replacement Parts

Dry Lube Controller



REF. NO.	PART NO.	DESCRIPTION
1	9401-6000	DRY LUBE COMPLETE INCLUDES THE FOLLOWING:
	9401-1000	DRY LUBE CONT PKD
	9401-1001	DRY LUBE SOLENOID PANEL
2	8526-5001	SOLENOID VALVE
3	8300-5108	RELAY TD SEC REC
4	8300-5090	RELAY TD SEC
5	8300-0016	RELAY 4P4T
6	8301-0003	TIMER ON-OFF
7	8300-1123	RELAY DPDT
8	8390-7048	CIRCUIT BREAKER
9	8363-0749	INDICATOR LAMP
10	8302-4349	CONTACT BLOCK
11	8302-4356	SWITCH OPERATOR
12	8539-0086	PRESSURE GAUGE
13	8420-0369	AIR REGULATOR
14	8525-0546	¼ BALL VALVE

Dry Lube Manifold



NO.	REF. PART NO.	DESCRIPTION
1	9401-1001	DRY LUBE SOLENOID PANEL
2	8525-0587	BALL VALVE
3	8526-0537	SOLENOID VALVE, 120VAC 60HZ, 6.1 Watts

* PART NOT SHOWN

*DRY LUBE TIMER BOX PKD	9401-1002
*1 GPH CONE JET COMPLETE STANDARD W/5 LB CHECK SPRING	8531-2551
*REPLACEMENT CHECK/STRAINER VALVE W/5 LB SPRING	8538-2372
*1 GPH CONE JET COMPLETE W/20LB SPRING CHECK VALVE/STRAINER	8531-2008
*2 GPH CONE JET COMPLETE W/20LB SPRING CHECK VALVE/STRAINER	8531-2009
*REPLACEMENT CHECK VALVE/STRAINER W/20 LB SPRING	8538-2373
*NOZZLE SHUT OFF 90 DEGREE 3/8 MPT X 3/8 QUICK CONNECT TO BE USED WITH NOZZLE BODY	8525-4003
*NOZZLE SHUT OFF 3/8 180 DEGREE FOR LINE TUBING	8525-4005
*NOZZLE BRACKETS 9"	9401-9585
*NOZZLE BRACKET 16"	9401-9593
*PUMP POSTRONIC IV-PT for up to 30 nozzles	9448-1249
*3/8" T X 3/8" MPT 90 degree pump fittings	8563-5126
Or	
*PUMP WILDEN P-1 – for installs over 30 nozzles or long tubing runs	8460-4003
*WILDEN PUMP WALL BRACKET	9477-1011
* 3/8" T X 1/2" MPT FITTINGS STRAIGHT FOR WILDEN PUMP	8561-5441
* 1/2" T X 1/2" MPT FITTINGS STRAIGHT FOR WILDEN PUMP	8561-5144
*DRUM PROBE 15-55 GALLON	9488-1265
*TUBING 3/8 POLYFLO 500 FT- should order min 500, larger lines 2-3X	8501-5121
*3/8 UNION PUSH TO CONNECT- order fittings based on no. of nozzles	8562-5127
*3/8 UNION COMPRESSION	8562-5036

*3/8 TEE PUSH TO CONNECT	8554-5002
*3/8 TEE COMPRESSION FITTING	8564-5059
*TYE WRAPS 100 PK	8310-9041
*ECO-STAR EMPTY DRUM ALARM	9259-2575
*ECOSTAR LOW LEVEL PROBE	9259-2484
*LOW LEVEL STROBE LIGHT ALARM- optional	9259-2492
*CONNECTOR, 3/8" X 1/2" MNPT, POLYPROPYLENE WITH PLASTIC GRIPPER	8561-5441
*CONNECTOR, 1/2" X 1/2" MNPT, POLYPROPYLENE WITH PLASTIC GRIPPER	8561-5144
*SOLENOID COIL, 24VAC, 60HZ, 6.1 WATTS, REPLACEMENT COIL FOR 8526-1287 & SOLENOID VALVE 8526-0537	8528-9163
* SOLENOID VALVE, 24VAC, 60HZ, 6.1 WATTS, 5/8" ORIFICE X 1/2" PIPE	8526-1287
* 1/2" POLY TUBING (250 FEET ROLL)	8501-5139
* 1/2" X 1/2" QUICK CONNECT TEE	8561-5565
* 1/2" X 3/8" UNION QUICK CONNECT	8572-5500
* 1/2" X 1/2" X 3/8" QUICK CONNECT REDUCING TEE	8445-5000